RFID and Content Analysis in a Smart Library Management System.

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Abstract— RFID is the most effective way of automatic item identification. RFID is crucial in auto ID applications such contactless smart cards used by bus drivers, grocery stores, the textile industry, and supply chain management. RFID tags are also used to keep track of books in a library. We have set up an AT (Automated Trolley) that uses RFID technology to shelve books in the library. A radio frequency identification (RFID) tag is attached to each book in the library. To direct AT to the correct slot in the correct rack, RFID tags are placed along the route.

Keywords—RFID, Automated Trolley, IOT, Raspberry pi, Arduino.

INTRODUCTION

Libraries with a lot of volumes take a lot of work to organize properly and swiftly during the course of a day in the stacks. Manual book arranging takes more labor and is prone to human mistake. Without human assistance, however, there is room for mistake in this procedure. Existing automated libraries include more intricate mechanisms and infrastructures (Ostwald Plutt, 2007; Gustafson and Ostwald, 2004) as they become more powerful and widely used. The whole library has been renovated, with particular attention paid to the design of library stacks. There is an added expense to maintaining the library stacks since they are equipped with custom control rooms and motors. Taking the book involves a more intricate technique. Here, access to storage spaces is strictly regulated (Ostwald Plutt, 2007). They come at a high price and could not mesh well with the regulations and norms of all emerging nations. Radio frequency identification (RFID) is now often utilized for tracking library circulation and inventory. It is, however, solely used for straightforward id (Vasishta, 2009; Butters, 2008) reasons. In the reported situations, books are tagged with sticky RFID, and readers are installed in strategic locations such as the issue counter, entry gate, and exit gate. The issue counter's reader is responsible for returning books (Vasishta, 2009). Because RFID does not need a site contact line, it is much quicker than scanning barcodes. The reader will be stationed at the entrance to examine the legitimacy of each book and ensure that it has been issued by the proper authorities. When a patron tries to leave the library with a book that has not been granted with the appropriate authorization or is not included in the problem counter's database, the RFID 70 reader will raise an alarm and notify the librarian.

RELATED WORK

In paper [1] author proposed Green Library to minimizes the negative impact on the natural environment and maximizes the quality of the environment through careful selection of sites, the use of natural building materials and the conservation of biodegradable products (water, energy, paper) and the proposal for responsible waste (recycling, etc.). The Green Library is part of the movement for green building. There are several reasons why the library would like to use intelligent technology to build green or incorporate green features in its buildings. First, it has become affordable to build green buildings. Second, most of the energy resources available for finite resources read. Intelligent technology basically means monitoring and analyzing hard drives that save money and energy in the workplace. In this article, how to reduce energy consumption by using intelligent technology in green libraries, smart technology revolutionizes the development of green buildings by using mobile tools to access digital information and modernize library missions.

[2] In most developing countries only few public services allow students and lecturers to have access to modern information systems and internet. Encounter several major constraints must be overcome to create good conditions for the development of science and technology. Electronic interface represents the only opportunity to provide library services and resources to online users anytime and anywhere. Thanks to applicable project management, electronic library can be designed efficiently for the benefit of poor people who have not access to modern information systems and technology.

In paper[3], The author talks about an innovative intelligent shopping and billing concept. The key idea here is to help a person buy a product every day in terms of reduced time. The main objective is to provide a technology-oriented, cost-effective, easily scalable and robust system for personal shopping.

In paper [4] Author designed an intelligent trolley using an intelligent phone and Arduino. With this system, the customer does not need to wait for the product items to be scanned for billing purposes in the queue. Supermarkets or hypermarkets only provide this faculty to customers with membership cards. If the customer inserts the membership card only in the basket or trolley, it works as an intelligent trolley. It's going to work as a normal trolley otherwise. This technique is used by supermarkets and hypermarkets to increase the number of customers.

In paper [5], The author proposes a low-cost, robust, passive shopping trolley system based on UHF RFID that allows shopping data to be traced and processed in real

time. Shopping trolleys mounted on the UHF antenna are defined as "Smart Trolleys" while shopping items are marked with unique identification codes using UHF RFID tags.

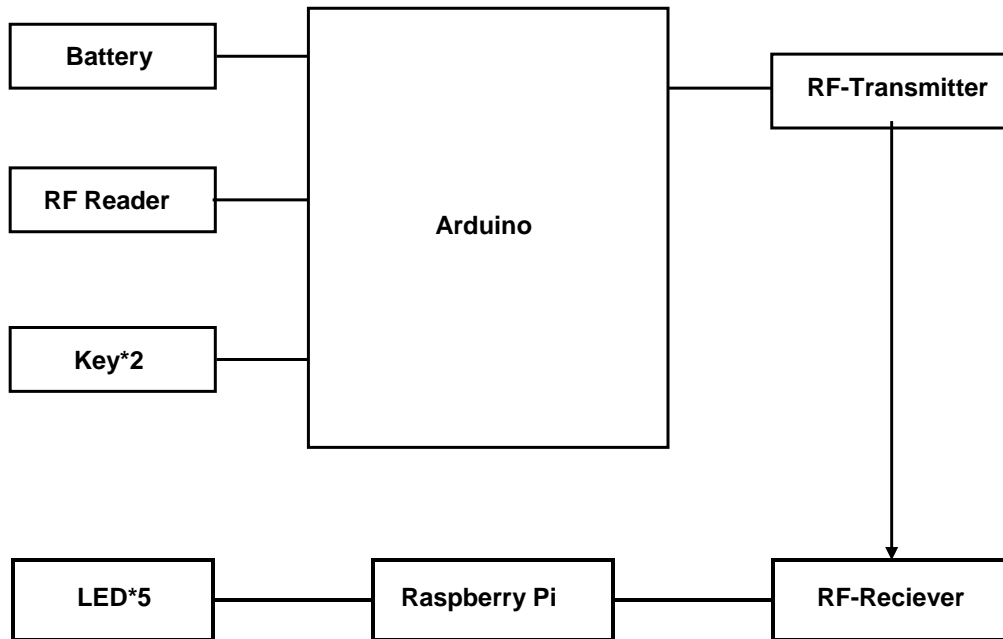I.   PROPOSED SYSTEM

Fig 1: Architecture diagram

In this paper we have implemented smart trolley for library. So for that as student will come he will select he want to get or submit the book in the library by pressing the key. As student will press the key and take the book the RFID scanner will read the details of the RFID tag which is on the book and update to the system that the student take the book. As that student will return the book he will press the key to submit and scan the book. The RFID scanner will read the data and send those data to the system by using Arduino with RF transmitter. As system will receive the details of the book then system will glow the LED light of that rack where that student or librarian has to keep that book. So that person will keep the book at his original place.
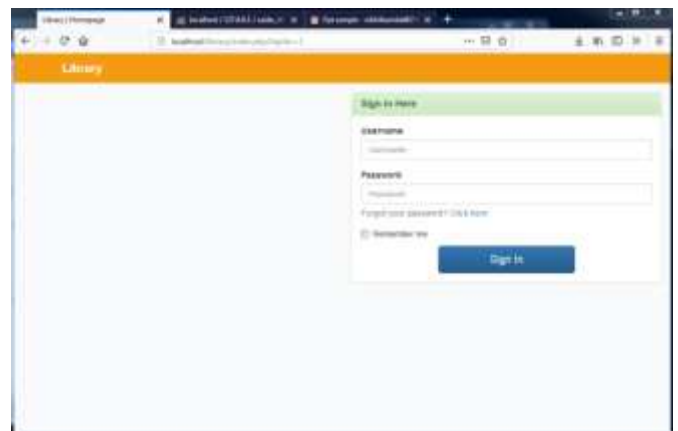
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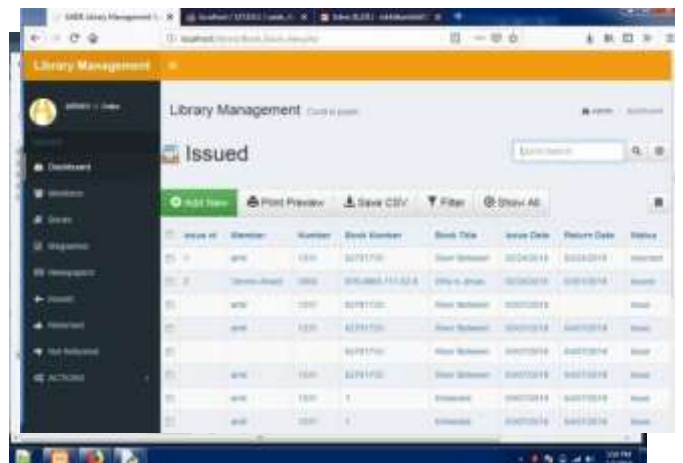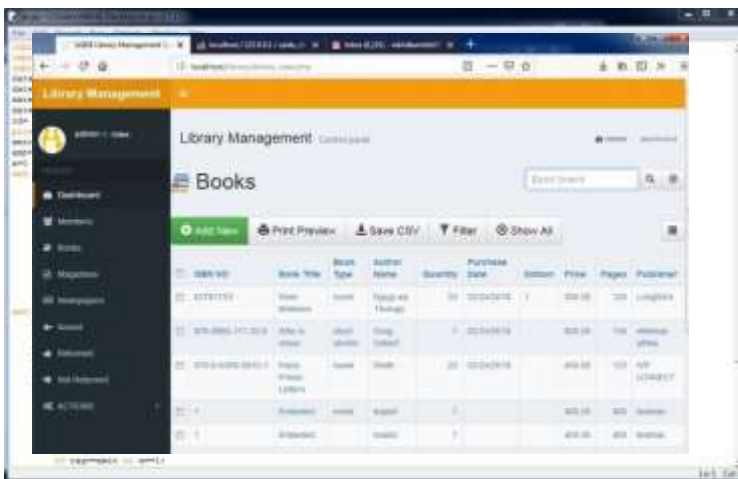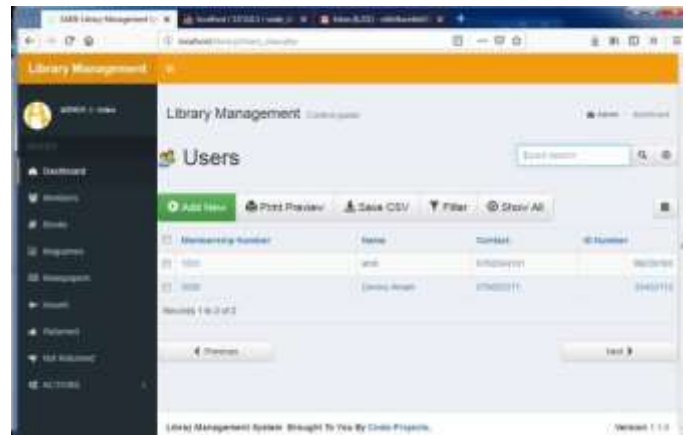
As a result, we have created an RFID-based intelligent library management system, and our text analysis system will automatically update its data through RFID, eliminating the need for manual scanning. The technology will automatically update the books, and the lights will come on to assist patrons locate them quickly and conveniently without having to go through every shelf. You will be informed of the optimal location for storing the book at the time of submission. An automated library cart was shown, providing a rapid and efficient way to sort through returned books using RFID technology. When it comes to identifying, tracking, and mapping books, RFID is the go-to tool. A working prototype of AT was created, and test runs on track layouts were conducted. The volumes were neatly stacked in their appropriate holders.

my family and friends, as well as the whole Department of Computer Engineering's professors.

REFERENCES

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[3] According to [3] "RFID Based Smart shopping" by Zeeshan Ali and Reena Sonkusare at the 2014 International Conference on Advances in Communication and Computing Technologies.

[4] Avinash Gupta, Sunil Kumar, Harpreet Singh Bedi*, and Harpreet Singh Bedi* Smart phone and Arduino powered smart trolly. The open access journal Electr Electron Syst, volume 6 issue 2 1000223J, ISSN: 2332-0796.

[5] For example, see [5] "Robust Low-Cost Passive uhl RFID based smart Shoppimg Trolly" by Tharindu Athauda, Juan Carlos Lugo Marin, Jonathan Lee, and Nemai Karmakar.